

UV Special Varnishes



Vers. 3
2023
04. Dec

UV-curable varnishes for visual / tactile effects or protective varnish

High degree of gloss, very matt, or structured, good resistances, fast curing

Field of Application

Substrates

These UV-curable varnishes are suited for the following substrates:

UVLG:

- Paper, cardboard, paste board, and plastics

UVLB:

- Paper, cardboard, pasteboard
- PE, PP self-adhesive foils, Corona pre-treated or top-coated
- Polyester PET foils, top-coated
- PVC and paper labels

UVLM / UVLS:

- Polycarbonate
- Pre-treated Polyester
- PVC

Since all the print substrates mentioned may be different in printability even within an individual type, preliminary trials are essential to determine the suitability for the intended use.

Field of use

UVLG:

Overprint varnish for full area or spot varnishing of offset and screen prints

Attention: Some offset and screen printing inks contain levelling agents, waxes or anti-offset powder to receive a better ink drying. This may affect levelling or adhesion of the gloss varnish. Furthermore good drying of the offset ink (non bleeding of the colours) before the UV varnish finish is vital as well as air humidity control in the printing room for good printed results.

UVLB:

UVLB 1 and UVLB 2 are suited for braille applications onto printed labels or further packaging materials, as an alternative to embossed or sprayed products.

UVLM / UVLS:

Varnishes for e. g. membrane switches, or for special graphic effects.

Characteristics

- Good chemical resistance
- Good rub and abrasion resistance
- Fast curing

Ink Adjustment

Recommendation

The varnish should be stirred homogeneously before printing and if necessary during production.

Drying

UVLG:

A UV-curing unit with a mercury lamp (80-120 W/cm) cures the varnishes at a belt speed of 20-35 m/min.

UVLB:

The UVLB 1 and UVLB 2 varnishes are highly reactive and have very fast curing properties. A UV drying unit with one or two medium pressure mercury vapour lamps (150-200 W/cm power) cures the varnishes at a belt speed of 15-50 m/min.

UVLM / UVLS:

A UV-curing unit with a medium pressure mercury lamp (80-120 W/cm) and a belt speed of 15-25 m/min will cure these UV varnishes. For the structured varnishes the use of nitrogen UV-dryers is not necessary.

The curing speed of the ink is generally dependant upon the kind of UV-curing unit (reflectors), number, age, and power of the UV-lamps, the printed ink film thickness, colour shade, substrate in use, as well as the printing speed. All UV varnishes are post-curing varnishes which will achieve their final adhesion and resistances after 24 hours. The ink film has

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to withstand a cross-cut tape test after having cooled down to room temperature.

Stress resistance

After proper and thorough drying, the ink film exhibits outstanding adhesion as well as rub, scratch, and block resistance, and is highly resistant to solvents, alcohol, finger sweat, water, and other usual fillers.

Range

UVLG

UVLG 5	UV Gloss Varnish
UVLG 6	UV Gloss Varnish
UVLG 7	UV Gloss Varnish

UVLS

UVLS 1	UV Structure Varnish, coarse
UVLS 2	UV Structure Varnish, fine

UVLB

UVLB 1	UV Braille Varnish, rotary screen printing
UVLB 2	UV Braille Varnish, flat bed screen printing

UVLM

UVLM 2	UV Matt Varnish
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UVLG 5

- varnish for offset applications
- optimized price
- high gloss
- very flexible
- fast curing, up to 3000 prints/h
- suited for double sided prints

UVLG 6

- high gloss, high transparency
- dirt repellent
- high chemical resistance
- "Anti-Graffiti" varnish (preliminary trials!)
- fast curing, up to 3000 prints/h

UVLG 7

- for very high ink deposits
- constant ink layer
- Very good edge definition
- Very flexible and transparent
- For flat bed screen printing and roll-to-roll
- fast curing, 20 – 35 m / min

UVLS 1

- pronounced structure
- transparent and non-sensitive surface

UVLS 2

- less structure
- milky

UVLB 1

Braille Varnish for rotary screen printing

UVLB 2

Braille Varnish for flat bed screen printing

UVLM 2

- matt varnish, milky
- for fully automatic screen printing presses
- low surface sensitivity
- homogeneous ink-flow
- for offset varnishing

We do not recommend these varnishes for toys due to the foreseeable contact with the mouth since the possible presence of residual monomers and decomposition products of the photoinitiators cannot be excluded even when sufficiently cured.

Auxiliaries

UVV 3	Thinner	1-3%
UR 3	Cleaner (flp. 42°C)	
UR 4	Cleaner (flp. 52°C)	
UR 5	Cleaner (flp. 72°C)	

The addition of thinner reduces the ink viscosity if necessary. An excessive addition of thinner will cause a reduction of the curing speed, as well as of the printed ink film's surface hardness. The thinner becomes part of the cross-linked matrix when UV-cured and may slightly change the inherent odour of the printed and cured ink film.

The cleaners UR 3 and UR 4 are recommended for manual cleaning of the working equipment. Cleaner UR 5 is recommended for manual or automatic cleaning of the working equipment.

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Printing Parameters

All commercially available capillary films (15-20 µm) or solvent resistant photo emulsions and combined stencils can be used for UV inks.

For regular overvarnishing (UVLG) we recommend to use very fine mesh counts like 150-27 to 185-27 threads (1:1 plain weave) in order to achieve a thin ink film. The varnishes can also be printed with a thicker mesh, up to 120-34 threads.

For UVLM / UVLS we recommend a mesh count between 120-31 and 150-34 threads (plain weave). A uniform screen tension is most important to receive an even finish.

UVLB 1 is best suited for rotary screen printing fabrics such as Gallus Screeny® Type BZ and Stork Screens Rotamesh® RM 75 with 40 % open area. Ink layer thicknesses of 150-220 µm are possible to print.

UVLB 2 is suitable for flat bed screen printing. Fabrics of 32-70 to 40-80 threads/cm can here be used. By using the corresponding stencil technology (EOM 160-190 µm), ink layer thicknesses of 150-220 µm max. can be printed.

Shelf Life

Shelf life depends very much on the formula/reactivity of the ink system as well as the storage temperature.

The shelf life for an unopened ink container if stored in a dark room at a temperature of 15-25 °C is:

- 2.5 years for UVLG 5 & 6
- 2 years for UVLG 7, UVLB 1 & 2
- 1.5 years for UVLS 1 & 2, UVLM 2

Under different conditions, particularly higher storage temperatures, the shelf life is reduced. In such cases, the warranty given by Marabu expires.

Note

Our technical advice whether spoken, written, or through test trials corresponds to our current knowledge to inform about our products and their use. This is not meant as an assurance for certain properties of the products nor their suitability for each application.

You are, therefore, obliged to conduct your own tests with our supplied products to confirm their suitability for the desired process or purpose. The foregoing information is based on our experience and should not be used for specification purposes. All characteristics described in this Technical Data Sheet refer exclusively to the standard products listed under "Range", provided that they are processed in accordance with their intended use and only when used with the recommended auxiliaries. The selection and testing of the ink for specific applications is exclusively your responsibility. Should, however, any liability claims arise, they shall be limited to the value of the goods delivered by us and utilised by you with respect to any and all damages not caused intentionally or by gross negligence.

Labelling

For the UV Special Varnishes there are current Material Safety Data Sheets available according to EC regulation 1907/2006, informing in detail about all relevant safety data including labelling according to EC regulation 1272/2008 (CLP regulation). Such health and safety data may also be derived from the respective label.

Safety rules for UV printing inks

UV-inks contain some substances which may irritate the skin. Therefore, we recommend to take utmost care when working with UV-curable printing inks. Parts of the skin soiled with ink are to be cleaned immediately with water and soap. Please read the notes on labels and safety data sheets.